Lecture 8

Ethics in Science

The scientist's goal

- To find objective knowledge of the world
- To spread the knowledge
- To combat falsehood.

Tasks for the scientist

- Research
- Publishing
- Teaching
- Expert Opinion
- Peer review
- Popularization

The basic problems of ethics

- Ethics is expected to give us answers to how we act in all possible situations.
- We can ask two fundamental questions:
- What - should we do?
- Why - should we do it?

Two ways of looking at ethics

- Emotivism-Morality is just about the feelings we have for something

- Cognitivism-Morality is something objectively existing and we can have knowledge about this something

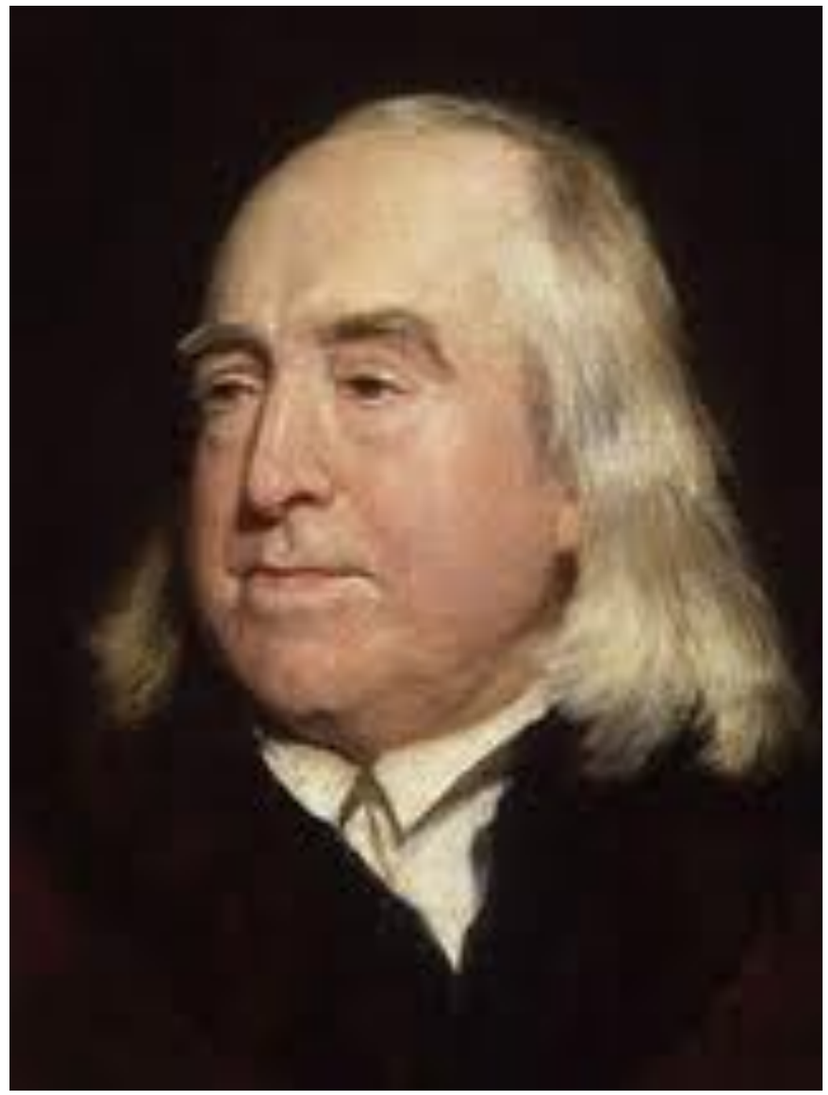
In our specific case

We will try to stick to the cognitive theories. Specifically, we will look at three of them:

- Consequentialism -Utilitarianism
- Duty Ethics- Deontology
- Contract Ethics

Consequentialism-Utilitarianism

John Stuart Mill



Jeremy Bentham

Consequentialism

- The basic idea in consequentialism is that we act so that we maximize the goodness of the results.

- What do we mean by good? Utilitarianism means that we try to policy is to maximize the total happiness in a society. Because it is the most common type of consequentialism we will primarily deal with it.

- What then is happiness? One interpretation is that it is a pleasure. Another that there is fulfillment of desires. More interpretations exist.

Good things with utilitarianism

- It has a logical clarity that makes it seem quite believable.
- It can handle requirements of impartiality in a good way.
- It allows for detailed analysis of different alternative options.

Weaknesses of utilitarianism

- Is this kind of happiness calculus really possible in practice?

- It seems to defend injustices and indifferences to a person's suffering when this suffering is outweighed by many people's happiness.

- It seems to be able to justify almost any type of actions, assuming that they have good consequences.

Act utilitarianism and Rule utilitarianism

- The idea of Act utilitarianism is that every action must be assessed individually.

- The idea of Rule utilitarianism is that we should follow the rules that usually leads to acts that have good consequences.

- Both types of utilitarianism have followers.

Duty Ethics-Deontology

Immanuel Kant

Duty Ethics

- According to the ethics of duty, we shall make an assessment of the acts themselves. Certain actions are prohibited regardless of the consequences.

- For instance, this could be acts like lying, breaking promises, stealing, murdering, etc.

- These acts are said to be bad in themselves. But how do we know that they are bad?

The categorical imperative

- "Always act according to that maxim which you may like to elevate to a universal law."
- Kant meant that morality is a question of unbiased logical reasoning.
- According to Kant, several of the morality laws have clear, logical explanations.
- It is, for example, contradictory to say that it is permissible to lie because the concept of truth and falsehood would lose its meaning if we could freely choose to lie.

Good sides of duty ethics

- It is simple and easy to understand.
- It often seems to match well with our intuition.
- It is often evident how to use it in applications.

Weaknesses of duty ethics

- It can defend some acts that could have very bad consequences only because the acts are correct *in themselves*.

- If we have various different moral laws which are in conflict with one another (which seems to be possible), how should we then choose? Duty ethics often talk about a hierarchy of rules. This does, however, make the theory more complicated.

A connection with ways of thinking about ethics

Ethics based on intuition - Works best with Duty Ethics

Ethics based on rationality - Works best with Consequence Ethics

Ethical Thought Experiments

Many ethical thought experiments are about medical problems. For instance:

A child is born without a functional brain. She can be kept alive for some time, but it is not really a life (or we don't think so)

- If her organs are needed for saving lives of other humans - is it right to let her die and transplant her organs?

- If a costly and difficult operation can prolong her life, but not making her well - is it right to refuse to do the operation?

- If her life (if it is to be called so) is painful - is it right for her parents to kill her (a "mercy killing")?

All these are actual cases.

Ethical Conflicts

In cases like this we can detect a conflict between rationality and intuition.

Another way to put it is that it is a conflict between consequentialism and duty ethics (*thou shalt not kill!).*

If problems like this have "solutions" we normally get them by considering a so called *reflexive equilibrium.*

The scepter of Egoism

The pervious problems were problems of the what kind. But then we have problems of the why kind.

This is an expression of a common attitude to (business) ethics:

"Everyone knows what is right to do. The problem is to do it!"

A central question of ethics is this: *Why shall we avoid being egoistic and instead see to the common good?*

The next theory tries to provide sort of an answer to this question.

The Contract Ethics

Thomas Hobbes

The Contract Ethics

- A code of ethics is a set of rules that you agreed to follow. We have, so to say, drawn up a contract.

- According to Hobbes, ethics is such a social contract that all citizens must be aware of.

- We can think of a profession that has rules for how its members should act. If you do not follow the rules, you are not in the profession any longer.

- Compare with playing chess: If you don't follow the rules you don't play chess!

Contract ethics for scientists

- The idea of an ethical contract seems to fit well with what scientists are doing.
- But how should the contract be— what rules should you follow?
- We propose that the rules are selected both with regard to consequentialism and duty ethics.
- We are trying to achieve *reflexive equilibrium.*

Some other theories

- Subjectivism - What I think is right, is right (for me).
- Relativism - What is right or wrong depends on what culture you live in.
- Emotivism - It is all emotions. It is good, yeah!!
- Virtue ethics - The important thing is to be a good person.
- Supernaturalism - Only what GOD commands is right.

The ethical problems for scientists

We now try to focus in the special problems that can face a scientist. Here are some of the main problems:

- Everything you go public with should be true and correct. *You shall tell the truth, the whole truth and nothing ...* and so on.

- You shall give recognition where recognition is due. (All these references, you know!)

- You should do research with good consequences. (Try not to be an *evil* genius.)

A proposal for scientific ethics

One suggestion is that a scientist should work in such a way so that he/she takes into account the following 10 principles

Ten principles

- Honesty
- Accuracy
- Openness
- Freedom
- Recognition
- Teaching
- Social responsibility
- Opportunity for all
- Mutual respect
- Respect for human (and animal) subjects in experiments

Based on: David B Resnik *The Ethics of Science*

Detail Studies

We look at some disciplines and some special problems.

Honesty

- The early 1970s. Summerlin "transplanted" skin from black mice onto white mice.

- It turned out that he painted the black stains on the white mice with a marker.

Honesty 2

- Millikan

Honesty 2

- In1910 Millikan determined the electron mass through experiments on the weight of charged oil drops.

- It turned out that he made 140 experiments but rejected 49 of them that didn't agree with the other ones.

Honesty 3

- The Baltimore Affair

- The Baltimore Affair (after Nobel Laureate, Baltimore)

- A researcher, Imamishi-Kama claimed to be able to implant genes in mice that changed their immune system.

- O'Toole, a post-doc, found notes in Imamishi-Kama's journal that contradicted the results.

- O'Toole reported this but it did not lead to any action.
- After that, O'Toole found it very hard to get jobs in the future.
- Later, the records were examined again and strange edits were found in them.
- Carelessness or forgery?

Honesty 4

- N-rays.
- N-rays "were discovered" in 1903 by Blondot. They could only be seen with the naked eye.
- Research on N-rays became fashionable. Around 100 scientists published about 300 articles about N-rays.
- But it turned out that they didn't exist at all!

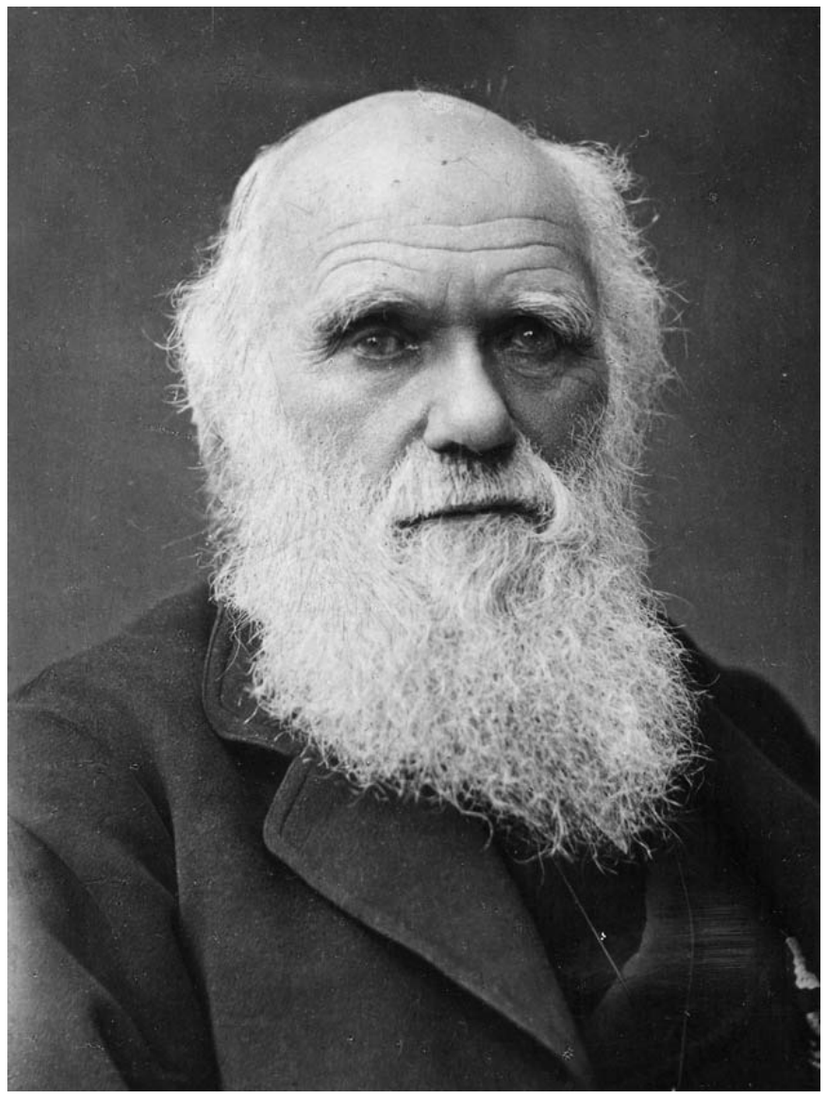
Honesty 5

In conclusion, it seems that weird errors in research can depend on:

- Intentionally cheating.
- Carelessness.
- Wishful Thinking.

Openness

Darwin withholding knowledge



Interlude:
Some History of Science

Early botany and natural philosophy

von Linné

Early botany and natural philosophy

- Botany becomes a science around mid 17th century.
- It is realized that species probably have *evolved.*
- and fossils seem to indicate that the Earth is probably much older than the Bible says.
- Carl von Linné: Describes the sexual system for the reproduction of plants.
- He creates a system of classification of species that is still in use.
- He places Man close to the apes in the system!
- He proposes a theory that says that the Earth is much older than previously believed and that it has once been totally covered with water.

Early botany and natural philosophy II

- There are continued speculations about the the age of the Earth.
- A model is created where it is assumed that the Earth has once breaked free from the Sun.
- At what rate is the Earth cooling down? An estimate shows that the Earth must be at least 75 000 years old. (A modern estimate is 4,5 billion years old, (miljarder in Swedish).)
- the first theories of evolution.
- Lamarck: Acquired properties can be inherited.

The second revolution: Geology and evolution

Lyell

Darwin

Geology and evolution

- Charles Lyell is considered the father of modern geology.
- He presents the thery of *uniformism* that says that the Earth has developed during a very long time by slow processes which are still at work today.
- Charles Darwin makes his famous journey with *Beagle* during the years 1831-1836.
- In 1859 he publishes *On the Origin of Species.*

Details

- During his trip Darwin becomes convinced the the species have developed.
- Other thinkers, for instance Lamarck, had already come to the same conclusion.
- Darwin found an explanation how and why they had evolved.
- *Natural Selection!*
- But objections where not late to arrive: For instance, a process governed by natural selection would take to much time.
- The discussion continues …

Transparency

- Darwin would say nothing about the insights he made during the trip with the Beagle. He remained silent for more than twenty years.
- Only after Wallace seemed to have come up with the same ideas, Darwin chose to publish.
- Unethical?

Transparency 2

- Wiles's actions

Transparency 2

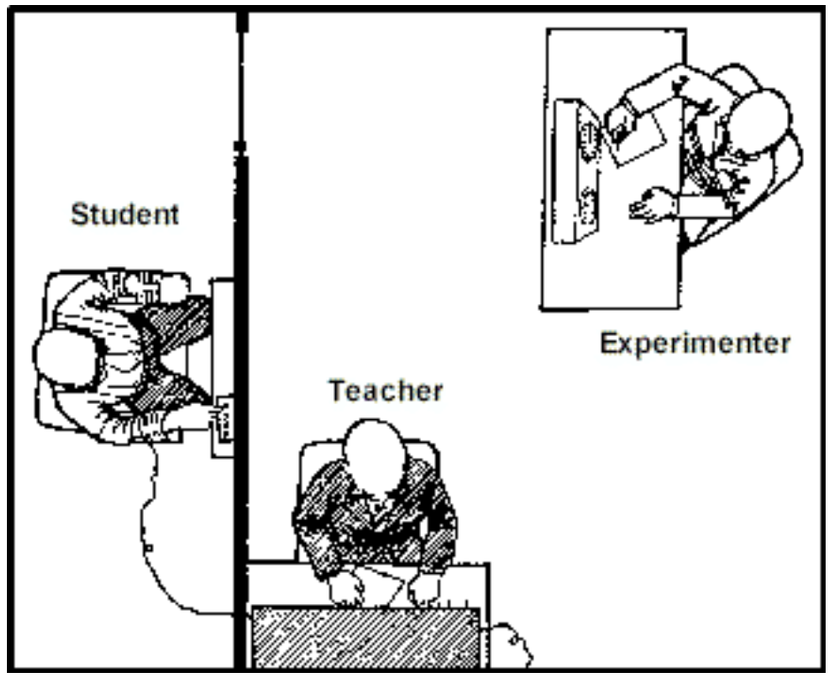
- Wiles announced a proof of Fermat's last theorem. The first proof he presented contained an error.
- He withdrew it and refused to explain his (partial) proof or to collaborate with anyone.
- Later he presented a corrected proof.
- Unethical?

Research on human subjects

- Milgram being tricky

Research on human subjects

- A famous experiments by Milgram in 1974.
- A person A got to ask questions of a person (B); If (B) answered wrong, (A) should give him an electric shock. The voltage was increased gradually.
- Finally A gave B a lethal shock!
- The experiment was repeated with many subjects. The results were the same on many cases.


Student
Teacher
Experimenter

Research on test subjects 2

- But the shocks were not real even if A thought so!
- People seem to be able to be manipulated to become evil.
- The experiment violates the rule that research subjects should be informed about what the experiment is.

Recognition and Publishing Questions

- Scientific articles are assessed according to the Peer Review System. Articles are reviewed by anonymous researchers (referee) in the same area. The system is single blind.

- It would be a better system was double blind?

- It would be better if the system was completely open?

Publishing questions 2

Code of ethics for a refereed:

- Shall assist the author.
- Must be fast and accurate.
- Shall not steal ideas.

Publishing questions 3

What are the main reasons against plagiarism?

It seems mainly to be that plagiarism complicates assessment of a person's qualifications.

Researchers must avoid accidental plagiarism (also).

But similar ideas may emerge at the same time.

Publishing questions 4

- Who should stand as main author?
- Basic principle: If X persons are stated as authors it should be assumed that they are equally responsible for the article.

Publishing questions 5

Problem:

- The Mathew effect: The best known gets all the glory.

  For to the one who has, more will be given, and he will have an abundance, but from the one who has not, even what he has will be taken away.

- All authors are responsible for errors.

- How serious is it for example, a doctoral student needs career help and a professor puts the student's name on a paper?

Teaching and popularization

Problems for popularizers:

- Takes time away from research
- Requires skills that often have not been taught.
- Often have to deal with disdain from colleagues.

Teaching and popularization 2

- Results presented in popularizations can be misunderstood.
- Is it, for example. useful to drink wine?
- Should the public know everything?

Teaching and popularization 3

To hide the information (on moral grounds) is often referred to as paternalism

- Three attitudes:
- Strong paternalism: Manipulating information in order to help people.
- Weak paternalism: Manipulating information in order not to harm people.
- Autonomy: Describe everything as it is.

Teaching and popularization 4

Research and teaching must in principle be regarded as equally important.

But in practice, teaching gives lower status.

Social conditions in the laboratory and research environments

Same problem as in other workplaces with harassment, and so on.

Strong interdependence between the supervisor and the doctoral student can give problems.

The problem is, of course, the supervisor has so great influence over the students career.

The ten principles again

Honesty

Scientists shall not falsify or distort the results. They must be objective and impartial in the research process.

Ex: the Baltimore affair and Millikan's experiment.

Accuracy

Scientists should avoid errors in research caused by carelessness and uncritical thinking. They should avoid self-deception and conflicts of interest.

Ex: cold fusion that didn't get reviewed before the press conference.

Openness

Scientists should share data, methods, and ideas with others. They shall permit criticism.

Example: Wiles's actions in connection with Fermat's last theorem can perhaps be criticized.

Freedom

Scientists should allow all kinds of research, ideas and theories. They shall, however, criticize research, ideas and theories they perceive as wrong.

Example: The Soviet Union was dominated by Lysenkos genetic theories and he was not challenged.

Recognition

Scientists should give recognition to those who deserve it, above all at the publication of books and articles.

Example: what does it mean when someone is standing in as one of the authors of an article but have not done anything?

Teaching

Scientists should devote part of their time to teaching. They should also strive to inform the public about science.

Example: Researchers that "flee from" teaching or deliberately miss-manages it.

Social responsibility

Scientists should avoid research that harms society. They should try to produce good effects. Scientists are responsible for their research and to inform the public about the possible negative consequences of it.

Ex: Research might show that wine drinking is useful in certain circumstances. Should they report it uncritically?

Opportunity for all

Scientists should strive for the goal that everyone have the opportunity to work in science regardless of gender and ethnic or social background.

Example: perhaps there should be "quotas" for certain groups.

Mutual respect

Scientists should treat colleagues with consideration and respect.

Ex: in some institutions there may be informal coffee room bullying.

Respect for the subject

Scientists should treat human subjects and laboratory animals with dignity. Scientists should not violate anyone's rights or privacy.

Ex: Milgrams obedience experiments is probably unethical.

Some Swedish recommendations and laws

Presented in Swedish

Forskningsrådets rekommendationer

1. Informationskravet: Informera alla deltagare om allt relevant.

2. Samtyckekravet: Deltagare måste samtycka och ha rätt att dra sig ur.

3. Konfidentialitetskravet: All forskande personal skall vara bunden av tystnadsplikt.

4. Nyttjandekravet: Inget får användas utan tillstånd.

5. Deltagare bör få ta del av resultatet.

PUL- Personuppgiftslagen

Personuppgiftslagen (PuL) trädde i kraft 1998 och har till syfte att skydda människor mot att deras personliga integritet kränks när personuppgifter behandlas. Begreppet "behandlas" är brett, det omfattar insamling, registrering, lagring, bearbetning, spridning, utplåning, med mera. Personuppgiftslagen bygger på gemensamma regler som har beslutats inom EU, det så kallade dataskyddsdirektivet.

Strukturerad information

Vilka regler i personuppgiftslagen som gäller beror på hur personuppgifterna som publiceras är strukturerade. Om personuppgifterna lagras i en databas eller annan typ av register anses uppgifterna vara strukturerade. Om personuppgifterna återfinns exempelvis i löpande text eller i e-post anses uppgifterna däremot vara ostrukturerade. För strukturerad personuppgiftsbehandling gäller betydligt fler regler än för ostrukturerad.

Känsliga uppgifter

Det är förbjudet att behandla "känsliga personuppgifter" som avslöjar

1. etniskt ursprung,
2. politiska åsikter,
3. religiös eller filosofisk övertygelse, eller
4. medlemskap i fackförening.

Det är också förbjudet att behandla sådana personuppgifter som rör hälsa eller sexualliv.

Undantag

Undantag har gjorts för litterära, konstnärliga och journalistiska ändamål, då namnuppgifter får publiceras helt fritt enligt Tryckfrihetsförordningen.[4] Tryckfriheten kräver sådana undantag. Med journalistiska ändamål menas "att informera, utöva kritik och väcka debatt om samhällsfrågor av betydelse för allmänheten." Undantaget omfattar bland annat den som är yrkesverksam journalist eller som arbetar för etablerade medier, men även andra kan behandla personuppgifter för journalistiska ändamål. Kravet är att materialet är avsett för publicering i grundlagsskyddad media.

Upphovsrätt

Upphovsrätt bygger på idén att den person som har skapat ett verk av en viss verkshöjd också ska ha ensamrätt att bestämma hur detta verk får användas. Upphovsrätten kan skyddas genom bestämmelser om straff för den som utan upphovsmannens medgivande nyttjar verket. Lagstiftning eller praxis kan också medge skadestånd till upphovsmannen och förbud för annan att nyttja verket.

Ensamrätten innebär att upphovsmannen äger en ekonomisk rätt och kan äga en ideell rätt. Den ekonomiska rätten innebär rätt att trycka eller framföra verket för allmänheten och att åtnjuta ekonomisk ersättning därav. Den ideella rätten innebär att den som skapat ett verk har rätt att bli omnämnd som upphovsman och ett skydd att inte verket används på ett sätt som kränker upphovsmannens goda namn.

Social responsibility

A few problems:

- Shall we allow research that can have bad impact on society?
- What about research that has political consequences?
- Expert evidence in trials. What is the problem?
- To keep secret the results of research for military reasons?

Objectivity

- The most important thing about science is perhaps objectivity.
- The true research results must always be accounted for.
- But can the choice of research fields be made objectively? And what about financing? Is it not always guided by economical interests?
- It is often said that research is be value free but still guided by values.